

ABSTRACT

A high frequency, low loss, power, laminated magnetic material includes alternating magnetic plates of low hysteresis loss material and electrically insulating films. The multi-layer structure allows for independently and simultaneously controlling and reducing hysteresis loss and eddy current loss, and maintaining a high resistivity, while operating at high frequencies and at high flux density levels, resulting in extremely low net loss density for the composite material. Methods of making this material include co-firing of the magnetic plates and thin insulating films, making the magnetic plates (of low hysteresis material, such as a ferrite) and insulating films separately, and using heat and/or pressure and/or adhesive or making a stack of magnetic plates with spacers in between them and dipping in a molten or liquid insulating material.